

INITIAL STATEMENT OF REASONS
FOR
PROPOSED BUILDING STANDARDS
OF THE
OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
REGARDING THE PROPOSED CHANGES TO THE CALIFORNIA BUILDING CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons be available to the public upon request when rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action:

STATEMENT OF SPECIFIC PURPOSE AND RATIONALE:

Part 2, Volume I

Sections 101.17.13, 420A.1, 420A.37, 420A.49, 421A.1 and 421A.4:

The Office of Statewide Health Planning and Development promulgates and enforces regulations for hospitals and skilled nursing facilities (SNFs) in California. Historically, the California Building Code has included different requirements for hospital-based skilled nursing units than it has for freestanding SNFs on a hospital license and for separately licensed SNFs.

Section 72103, Title 22, CCR, defines "skilled nursing facility" as "a health facility or a distinct part of a hospital which provides continuous skilled nursing care and supportive care to patients whose primary need is for availability of skilled nursing care on an extended basis." This definition makes no distinction between skilled nursing services that are provided as a distinct part unit in an acute care hospital, as a distinct part in a freestanding building on the hospital license, or a freestanding separately licensed SNF. Therefore, the regulations that apply to skilled nursing services should be the same, regardless of the type of facility in which the services are provided.

The purpose for this change is to make the regulations for skilled nursing facilities the same, whether the facility is a freestanding separately licensed SNF, a freestanding SNF building on a hospital license, or a distinct part SNF unit in a hospital building.

Section 421A.4, Exception 1 is being added, which permits a maximum of 4 beds in skilled nursing facilities, where 8 beds are allowed in hospitals. This requirement is from the Code of Federal Regulations (CFR), Section 483-70(d)(1)(i). Compliance with the CFR is required to participate in Medicare/Medicaid funding. This requirement should be in the Building Code, so architects and owners are aware of it when they are designing the facilities.

Section 420A.7:

This proposal eliminates the requirement for operable windows in patient rooms in hospitals and skilled nursing facilities. The Centers for Medicare and Medicaid Services (CMS) require compliance with the NFPA 101 Life Safety Code to qualify for federal reimbursement for health facilities. Until recently, CMS required compliance with the 1985 edition of NFPA 101, which required operable windows in health care occupancies to provide fresh air for occupants in emergencies and venting of products of combustion. In January 2003, CMS adopted the 2000 Edition of NFPA 101, which no longer requires operable windows.

There is no justification to continue requiring operable windows for hospitals and skilled nursing facilities in the California code, since NFPA 101 no longer requires them, and there is no other fire or life safety reason for them. Current code requires mechanical ventilation for hospitals and skilled nursing facilities, and also requires these facilities to be compartmentalized and provide other passive and active smoke control systems to protect occupants from the spread of smoke.

Section 422A.4:

420A.4.0 was recently amended to include requirements for utilities and systems serving hospital buildings. This section does not apply to licensed clinics. For clarity, we are changing the reference to only those sections that may apply to licensed clinics.

Part 2, Volume II**Chapter 16****Section 1605.2.2:**

This change corrects references to the overturning requirements for wind and seismic loads.

Section 1633.2.6:

This change corrects the notation for the variable E_m .

Chapter 16A**Section 1605A.2.2:**

This change corrects references to the overturning requirements for wind and seismic loads.

Section 1611A.7:

This change corrects an incorrect section reference. This issue was identified in the January, 2001 errata to the Uniform Building Code.

Section 1629A.1:

Code sections 1629A.1, 1630A.8.3, and 1633A.2.12 cover the basis for design of foundations. This often involves multiple checks, both an allowable stress design or strength design check using dead, live, wind, and seismic loads (reduced by the factor R), as well as, a limit state check based on the capacity of the superstructure. The requirements are not mutually exclusive, but complimentary, and the foundation must meet all applicable requirements. This change adds a reference in Section 1629A.1 to Section 1633A.2.12, so that neither foundation check is overlooked.

Section 1629A.2:

Section 1629A.2 covers the procedures needed to justify the use of an undefined structural system. This code change adds a reference to Section 1631A.2.2, which discusses the collapse prevention check for the Upper Bound Earthquake. This will assure that buildings with undefined structural systems can withstand the UBE without collapse.

Sections 1630A1.1:

This change addresses a potential conflict in the provisions for nonstructural components. The CBC currently has two separate loading requirements for the application of vertical seismic force to nonstructural components. First, footnote 20 of Table 16A-O requires application of a vertical force of $1/3 F_p$ acting simultaneously with the horizontal force F_p . However, Section 1632A.2 also references the load combinations of Section 1612A, and therefore, by reference, Section 1630A.1.1 where a vertical seismic demand, E_v , equal to $0.5C_a/D$ is specified. The vertical loads of footnote 20 and E_v could be construed as being additive, which is not the intent. In addition, F_p is amplified in the upper levels of the building, and therefore, the vertical load of footnote 20 is also amplified. This also is not the intent.

This proposal, with the changes to Section 1632A.2, would consolidate these two vertical load requirements into a

single requirement, by eliminating Footnote 20 to Table 16A-O, covering vertical seismic forces in Sections 1630A.1.1 and 1632A.2. This approach is compatible with the general methodology of the NEHRP *Recommended Provisions for Seismic Regulations for New Buildings and Other Structures*, 2000 Edition.

Section 1630A.8.3

Code sections 1629A.1, 1630A.8.3, and 1633A.2.12 cover the basis for design of foundations. This often involves multiple checks, both an allowable stress design or strength design check using dead, live, wind, and seismic loads (reduced by the factor R), as well as, a limit state check based on the capacity of the superstructure. The requirements are not mutually exclusive, but complimentary, and the foundation must meet all applicable requirements. This change adds a reference in Section 1630A.8.3 to Section 1633A.2.12, so that neither foundation check is overlooked.

Section 1631A.2

Section 1631A.2 provides requirements for ground motion to be used in the dynamic analysis procedures. The proposed change reorganizes the section to improve clarity. Currently, the second sentence of the section permits the user to select one from a list of six ground motion representations. However, only the first four options are actually applicable. Option 5 describes a method for determining the vertical component of ground shaking. Option 6 describes the “upper bound earthquake” and criteria for collapse prevention analysis, which is only used for irregular or unusual structures.

The proposed change limits the ground motion representations to the first four options, by placing items 5 and 6 into separate sections.

Section 1632A.1:

In the second paragraph, language is added to clarify what is meant by the term “required bracing”.

Section 1632A.2. Table 16A-O, Footnote 20:

There are three changes proposed for this Section, dealing with a change in formula 32A-2, determination of lateral forces for components such as walls with multiple points of attachment to the structure, and correction of a potential conflict in the vertical force requirements for nonstructural component anchorage.

In formula 32A-2, the term $\left(1 + 3\frac{h_x}{h_r}\right)$ is used to amplify lateral forces over the height of the building. The

maximum amplification occurs at the roof, where forces may be 4 times greater than those at ground level. This amplification factor (and in fact, the formula in general), are based on the 1994 NEHRP *Recommended Provisions for Seismic Regulations for New Buildings*. Subsequent research has shown that for larger levels of ground shaking, a maximum amplification factor over height equal to 3 is a better representation of the expected shaking demands on nonstructural components. Therefore, beginning with the 1997 NEHRP *Provisions*, the maximum amplification factor over height has been reduced from 4 to 3. To bring the CBC formula into alignment with the

most current national standards, the term $\left(1 + 3\frac{h_x}{h_r}\right)$ has been revised to $\left(1 + 2\frac{h_x}{h_r}\right)$.

This proposal adds language describing the method for determining lateral forces on components such as walls, which have multiple points of attachment to the structure at different levels. This language is identical to that for existing structures in Section 1644A.13.1.2.

The CBC currently has two separate loading requirements for the application of vertical seismic force to nonstructural components. First, footnote 20 of Table 16A-O requires application of a vertical force of $1/3 F_p$ acting simultaneously with the horizontal force F_p . However, Section 1632A.2 also references the load combinations of Section 1612A, and therefore, by reference, Section 1630A.1.1 where a vertical seismic demand, E_v , equal to $0.5C_a/D$ is specified. The vertical loads of footnote 20 and E_v could be construed as being additive, which is not the intent. In addition F_p is amplified in the upper levels of the building, and therefore, the vertical

load of footnote 20 is also amplified. This also is not the intent.

This proposal would consolidate these two vertical load requirements into a single requirement, by eliminating footnote 20 to Table 16A-O, and adding provisions for vertical seismic forces in Section 1632A.2. The vertical demand is multiplied by a factor 0.7 for Allowable Stress Design. This approach is compatible with the general methodology of the NEHRP *Recommended Provisions for Seismic Regulations for New Buildings and Other Structures*, 2000 Edition.

Section 1632A.6:

This section has been reorganized for clarity. There are actually seven exceptions listed in this section, but only three are numbered. The rest are interspersed between or following the numbered items. A requirement, that where bracing is omitted for short hangers, the hangers be detailed to avoid bending of the hangers and their connections has been added for piping. An identical provision currently exists for unbraced ductwork supported by short hangers.

Section 1633A.2.6

This change corrects the notation for the variable E_m .

Section 1633A.2.12:

Section 1633A.2.12 contains requirements for foundation design at two levels, design basis level, using reduced seismic loads, and limit state check, based on the capacity of the vertical lateral force resisting system. An editorial change is made to the second paragraph to improve clarity, by indicating that both design checks are complimentary.

The proposed change also adds an exemption from the limit state check for single-story light frame structures. In general, the foundation demands on these structures are low, and the lateral force-resisting systems are highly redundant. Hence, the limit state check is unnecessary.

Table 16A-M:

This change corrects a reference to Section 1633A.2.9. The current entry references the 1998 CBC.

Table 16A-O:

Item 1A(3): Currently, Footnote 8 covers ceiling systems in detail, with a reference to partition loads in the last sentence. This reference in Footnote 8 to the minimum partition loads in Section 1611A.5 has been moved to footnote 11, to improve clarity.

Item 1C: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 2A: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 2E: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 2F: Footnotes 25 and 26 refer to Item 2F, anchorage and bracing of suspended ceiling systems. The references have been added.

Item 2G: A reference to Footnote 14 is added, since some floors in rooms housing computers and instruments now vibration isolated. The reference to footnote 20 has been deleted. Vertical seismic loads for nonstructural components are no covered in Section 1632A.2.

Item 2J: Currently, Footnote 8 covers ceiling systems in detail, with a reference to partition loads in the last sentence. This reference in Footnote 8 to the minimum partition loads in Section 1611A.5 has been moved to footnote 11, to improve clarity.

Item 3A: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 3B: The reference to Footnote 11 is deleted (the text of this footnote currently reads "Deleted."). The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 3C: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 3D: a_p for emergency power supply systems is given as 1.3, in order to reduce ductility demands (and hence increase the design forces) for these critical components. However, use of a_p in this manner is inconsistent with the underlying assumptions of the nonstructural component design process, where a_p is a function of the component period alone. Therefore, the value of a_p has been reduced to 1.0 (rigid component), and the value of R_p has been reduced to 2.5, which yields approximately the same design force as the current provisions. Footnote 14 has been added to emergency power supply systems, since these systems are sometimes installed on vibration isolation mounts. Since the tabulated a_p for emergency power supply systems is 1.3 (with a change to 1.0 proposed), this might lead the designer to incorrectly ignore the requirements for vibration isolated components, which are listed in footnote 14 and are more restrictive. By referencing footnote 14 in Table 16A-O, this confusion is avoided. The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Item 3F: Footnote 27 applies to item 3F, elevators (the reference to footnote 25 is in error).

Items 4A, 4B, 4C, 4D: The reference to Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.

Footnote 2: The Footnote has been edited for clarity. The phrase "...for connections for panel connectors for panels" has been changed to "...for connections for wall panels".

Footnote 4: The reference in Footnote 4 to "Division IV" has been corrected to "Division X". This was identified in the January 2001 Errata to the Uniform Building Code.

Footnote 5: This footnote, which limits design to attachments, anchorage, and restraints, is referenced in Items 2E, permanent floor-supported cabinets and book stacks, Item 3B, electrical, mechanical, and plumbing equipment and systems, and Item 3C, flexible equipment. A pointer to Section 1632A.1, which describes more fully what constitutes "anchorage and bracing", is provided.

Footnote 8: The reference in Footnote 8 to the minimum partition loads in Section 1611A.5 has been moved to footnote 11, to improve clarity.

Footnote 11: The text of Footnote 11 is deleted (the text of this footnote currently reads "Deleted."). The reference in Footnote 8 to the minimum partition loads in Section 1611A.5 has been moved to footnote 11, to improve clarity.

Footnote 12.3: The description of short rod hangers used to laterally support electrical distribution systems have been revised for clarity and consistency with similar provisions for other systems.

Footnote 14: The footnote has been revised editorially for clarity. The nonstructural components have been added (the footnote was previously limited to equipment), to account for isolated access floors, an architectural component.

Footnote 15: The footnote has been revised editorially for clarity.

Footnote 20: Footnote 20 has been deleted. Vertical seismic loads for nonstructural components are now covered in Section 1632A.2.f

Section 1641A:

This editorial change clarifies the definition of the lateral load capacity of a structural system.

Section 1642A.1:

This proposal includes editorial clarification of the definition of usable strength, and correction of notation for maximum inelastic response displacement.

Section 1643A.1:

This editorial change corrects the reference to Chapter 16, Division IV.

Section 1644A.9.2.3.2:

This change corrects references to the Steel Chapter in Section 1644A.9.2.3.2 Item 1.

Section 1644A.13.1.2:

This change corrects errors in formulas 44A-14, 44A-15, and 44A-16, modifies the amplification with height term in formula 44A-15, and modifies the procedure for determining vertical seismic forces on nonstructural components and systems.

Formulas 44A-14, 44A-15, and 44A-16 contain the β factor, which modifies the seismic force based on the ductility of the component or attachments. This is in error, since the β factor is included in the load combinations of Sections 1641A.4.1.1 and 1644A.4.1.2. The importance factor I_p was inadvertently dropped from formula 44A-15.

In formula 44A-15, the term $\left(1 + 3 \frac{h_x}{h_r}\right)$ is used to amplify lateral forces over the height of the building. The maximum amplification occurs at the roof, where forces may be 4 times greater than those at ground level. This amplification factor (and in fact, the formula in general), are based on the 1994 NEHRP *Recommended Provisions for Seismic Regulations for New Buildings*. Subsequent research has shown that for larger levels of ground shaking, a maximum amplification factor over height equal to 3 is a better representation of the expected shaking demands on nonstructural components. Therefore, beginning with the 1997 NEHRP *Provisions*, the maximum amplification factor with height has been reduced from 4 to 3. To bring the CBC formula into alignment with the most current national standards, the term $\left(1 + 3 \frac{h_x}{h_r}\right)$ has been revised to $\left(1 + 2 \frac{h_x}{h_r}\right)$. This change parallels that proposed in Section 1632A.2.

An editorial correction to the description of the procedures for computing lateral design force for elements with multiple points of attachment is made. The force coefficients of interest are F_p and W_p , not the term F_p/W_p .

Footnote 20 of Table 16A-O requires application of a vertical force of $1/3 F_p$ acting simultaneously with the horizontal force F_p . However, F_p is amplified in the upper levels of the building, and therefore, the vertical load of footnote 20 is also amplified. This is not the intent.

This proposal (along with that for Section 1632A.2) would eliminate Footnote 20 to Table 16A-O, and add provisions for vertical seismic forces in Section 1644A.13.1.2. The vertical demand is multiplied by a factor 0.7 for Allowable Stress Design. This approach is compatible with the general methodology of the NEHRP *Recommended Provisions for Seismic Regulations for New Buildings and Other Structures*, 2000 Edition

Section 1648A.2.3.1:

This editorial change corrects a reference to the variable R_w . The correct variable is R .

Appendix Chapter 16A**Sections 1665A.2.3 and 1665A.4:**

Variables in the formulas in Item 4 of Section 1665A.2.3 and Items 3 and 4 of Section 1665A.4 were incorrect. This was identified in the March 2001 and October 2001 errata to the 1997 UBC.

Chapter 18A**Section 1804A:**

The change corrects citations to the Health & Safety Code for Hospitals.

Section 1809A.5:

This change corrects an erroneous reference to a section. The error was identified in the January 2001 errata to the Uniform Building Code.

Chapter 19**Section 1921.0:**

This editorial change corrects notation, and deletes the alternative definition for Δ_M that includes the variable R_w , since this variable is not used in the current CBC. The correct variable is R .

Chapter 19A**Section 1903A.11:**

This change adds the name of the manual publisher to the citation of the referenced document. The error was identified in the January 2001 Errata to the Uniform Building Code.

Section 1905A.2.3:

This change corrects an erroneous reference to a table.

Section 1921A.0:

This editorial change corrects a typographical in notation for Δ_M .

Section 1921A.3.2:

This change corrects error that was identified in the January 2001 Errata to the Uniform Building Code.

Section 1921A.5.3:

This change corrects a typographical error that was identified in the January 2001 Errata to the Uniform Building Code.

Chapter 21A

Section 2108A.2.2.6:

This change restores the upper bound limits on required development length for reinforcing steel found in the model code equations. Without these upper limits, formulas 8A-12 and 8A-13 can produce excessively high development lengths.

Section 2108A.2.6.2.6:

This change corrects a variable value and notation. The term R_w is undefined in the 2001 CBC, and is a holdover from the Allowable Stress Design provisions used for seismic design in the 1998 CBC. This was identified in the January 2001 Errata to the 1997 Uniform Building Code.

Chapter 22

Section 2210:

This formulas given are for amplified horizontal earthquake loads. The correct variable for these loads is E_h , rather than E , since E includes the vertical ground motion component, E_v .

Chapter 22A

Section 2213A.7.3:

This change fixes an incorrect section reference. This was identified in the January 2001 Errata to the 1997 Uniform Building Code.

Section 2213A.9:

This change fixes an incorrect section reference. This was identified in the January 2001 Errata to the 1997 Uniform Building Code.

Sections 2219A and 2219A.3:

This change corrects typographical errors. The symbols for the strength reduction factor and safety factor were incorrectly printed. The reference to Table 22A-VIII-B in Section 2219A.3 is deleted, since the table is not adopted by OSHPD.

Sections 2220A.2:

This change corrects typographical errors and clarifies the load combinations. In Section 2220A.2, Items 1 and 2 are load combinations, not modifications, and the omega symbols are missing in the formulas.

Chapter 23

Section 2316 – Design Specifications

This change updates the reference to the current edition of the national wood design standard, which is the 2001 edition National Design Specification (2001 NDS). The 1991 revised edition NDS, which is adopted in the 2001 CBC, is no longer published.

Section 2316.2 (Amendments to the NDS)

These changes repeal amendment items 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, and 26. These items amended the 1991 edition NDS, and are adequately addressed within the 2001 NDS. The amendments that are continued (items 4, 5, 6, 7, 8, 22, 23, 25) have been retained to maintain current CBC requirements and statewide consistency with wood design standards adopted by other state agencies.

Section 2318.3.3

This editorial change provides reference to proper amendment item, due to changes proposed to Section 2316.2.

2318.3.4 Corrosion resistance.

This change modifies the required galvanized coating to comply with current national standards (ASTM F1667). A 1.0 ounce coating is within recognized industry standards.

Sections 2320.8.3, 2320.8.7, 2320.12.8

This editorial change provides reference to proper amendment item, due to changes proposed to Section 2316.2. Also Section 2320.8.3 is amended to conform to the NDS standard (2nd paragraph, regarding notch depth).

Chapter 23A

Section 2316A – Design Specifications

This change updates the reference to a more current edition of the national wood design standard (2001 ed.), and is the edition currently used in structural engineering practice.

2316A.2 Amendments

This change repeals existing amendment Items 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 30, 32, 34, and 35. The issues covered by these amendments are now covered in the NDS. The remaining amendments are retained.

Existing amendments 4, 5, and 6 address the Duration of Load (DOL) factor. The primary reason to retain at this time is to provide for statewide consistency in the application of DOL for seismic/wind. Occupancies such as privately-owned commercial, retail, office, etc. are not regulated by any state agency, and the 1991 ed. NDS (and 1997 UBC amendments) will still remain the applicable standard, enforced by local jurisdictions, and will continue to use 1.33 DOL.

Existing amendments 7 and 8 are retained at this time, due to lack of information that would provide a basis for repeal. The 2003 IBC, Sec. 2306.1.3 suggests retaining these two amendments will be in keeping with the current state of the art.

Existing amendment 22, 26, 27, 29, 31, and 33 are retained at this time, due to lack of information that would provide a basis for repeal.

Existing amendment 28 is retained, but portions of the requirements that are now covered in the NDS are deleted.

2318A.3.3 Spacing and penetration.

This editorial change is needed due to the adoption of the 2001 NDS.

2318A.3.4 Corrosion resistance.

This change modifies the required galvanized coating to comply with current national standards (ASTM F1667). A 1.0 ounce coating is within recognized industry standards.

2320A.8.3 Framing details

This editorial change provides reference to proper amendment item, due to changes proposed to Section 2316A.2. Also Section 2320A.8.3 is amended to conform to the NDS standard (2nd paragraph, regarding notch depth).

2320A.8.7 Spacing and penetration.

This editorial change is needed due to the adoption of the 2001 NDS.

2320A.12.8 Spacing and penetration.

This editorial change is needed due to the adoption of the 2001 NDS.

TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS:

NFPA 101, Life Safety Code, 1985 and 2000 editions.

Federal Register 68 FR 1374.

Title 22, CCR, Section 72103

NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures, 2000 Edition, FEMA 368. March 2001.

Errata to the 1997 Uniform Building Code. ICBO. January 2001.

Errata to the 1997 Uniform Building Code. ICBO. March 2001.

Errata to the 1997 Uniform Building Code. ICBO. January 2001.

Errata to the 1997 Uniform Building Code. ICBO. October 2001.

CONSIDERATION OF REASONABLE ALTERNATIVES

The alternative to these proposed regulations would be to leave regulations as they are. The alternative was rejected, since it would maintain design requirements that are more restrictive than needed to accomplish the performance objectives for hospitals in California, and not correct conflicting or inaccurate code provisions.

REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.

There will be no adverse impact on small business.

FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS.

The regulations proposed will have no significant adverse impact on business since they are less restrictive than current regulations.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

These regulations do not duplicate Federal regulations.